

We claim:

1. A method for trimming a circuit device containing trim elements, the method comprising:

applying, in an online mode of operation, one or more trim bit sequences to the circuit device;

evaluating, in said online mode of operation, the effect on the circuit device resulting from each of the trim bit sequences applied thereto, without physically altering any of said trim elements;

determining, in said online mode of operation, one or more optimum trim bit sequences required to achieve a desired test results; and

permanently adjusting, in an offline mode of operation, one or more trim elements of the circuit device in accordance with the determined one or more optimum trim bit sequences.

2. A method as in claim 1, wherein said circuit device is connected to an external electrical measurement apparatus during said online mode of operation and is disconnected from said external electrical measurement apparatus during said offline mode of operation.

3. A method as in claim 2, further comprising the step of generating and storing a data base representative of said one or more optimum trim bit sequences.

4. A method as in claim 2, further comprising the step of generating and storing a data base of information obtained in the online mode of operation.

5. A method as in claim 3, further comprising the step of generating and storing a data base of information obtained in the online mode of operation.

6. A method as in claim 3, wherein said data base comprises a wafer map.

7. A method as in claim 4, wherein said data base comprises a wafer map.

8. A method as in claim 5, wherein said data base comprises a wafer map.

9. A method as in claim 1, wherein, after the completion of trim bit sequences evaluation, the online mode of operation is permanently disabled and the offline mode of operation is permanently enabled.

10. A trimming circuit for use in trimming a circuit device containing trim elements, the trimming circuit comprising:

- one or more trim elements;
- one or more trim bit subcircuits, each of said trim bit subcircuits being associated with one or more trim elements; and
- associated circuitry operative in online and offline modes of operation of said trimming circuit.

11. A trimming circuit as in claim 10, wherein said associated circuitry is operative, during said online mode of operation, for permitting the external application of trim bit sequences to said circuit device.

12. A trimming circuit as in claim 11, wherein said associated circuitry comprises a shift register for enabling external input or programming of said trim bit sequences.

13. A trimming circuit as in claim 12, wherein said shift register comprises one or more trim bit subcircuits.

14. A trimming circuit as in claim 13, wherein:

each one of said trim bit subcircuits is associated with a particular trim bit; and
each one of said trim bit subcircuits is associated with one or more trim elements.

15. A trimming circuit as in claim 14, wherein each of said one or more trim bit
subcircuits comprises a bistable flip-flop circuit.

16. A trimming circuit as in claim 14, wherein said one or more trim elements comprise
one or more fuses.

17. A trimming circuit as in claim 16, wherein said one or more fuses comprise one or
more polysilicon fuses.

18. A trimming circuit as in claim 16, wherein said one or more fuses comprise one or
more metal fuses.

19. A trimming circuit as in claim 14, wherein said one or more trim elements comprise
one or more Zener diodes.

20. A trimming circuit as in claim 14, wherein said one or more trim elements comprise
one or more memory circuits.

21. A trimming circuit as in claim 10, wherein each of said one or more trim bit
subcircuits comprises:

a current source connected to a selected one of upper and lower power supply rails;
a switch connected to a remaining one of said upper and lower power supply rails; and
a fuse connected between said current source and said switch.

22. A trimming circuit as in claim 15, wherein each of said one or more trim bit
subcircuits comprises two fuses, connected in series and to the one of said bistable flip-flop

circuits associated with that trim element.

23. A trimming circuit as in claim 10, wherein one or more of said trim elements are operative for permanently disabling said online mode of operation of said trimming circuit and for permanently enabling said offline mode of operation of said trimming circuit.